b.) Amendments to the Claims

1. (Currently Amended) An isolated ~~multipotential~~ adult bone marrow-derived stem ~~cell which has been isolated from an adult bone marrow, and which~~ cell, wherein said stem cell can differentiate into ~~each of~~ at least two cells, one of which is a cardiomyocyte~~, an adipocyte, a skeletal muscle cell, an osteoblast, and a vascular endothelial cell~~.

Claims 2-5 (Canceled)

6. (Currently Amended) The cell according to claim 1, ~~wherein the cell is a multipotential stem cell~~ which can also differentiate into ~~each of a cardiomyocte,~~ at least one of an adipocyte, a skeletal muscle cell, an osteoblast, a vascular endothelial cell, a nervous system cell, and a hepatic cell.

7. (Currently Amended) The cell according to claim 1, wherein the cell is a multipotential stem cell which differentiates ~~into any cell~~ in adult tissues.

8. (Previously Presented) The cell according to claim 1, wherein the cell is CD117-positive and CD140-positive.

9. (Original) The cell according to claim 8, wherein the cell is further CD34-positive.

10. (Original) The cell according to claim 9, wherein the cell is further CD144-positive.

11. (Previously Presented) The cell according to claim 9, wherein the cell is further CD144-negative.

12. (Previously Presented) The cell according to claim 8, wherein the cell is further CD34-negative.

13. (Original) The cell according to claim 12, wherein the cell is further CD144-positive.

14. (Original) The cell according to claim 12, wherein the cell is further CD144-negative.

15. (Original) The cell according to claim 10, wherein the cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

16. (Original) The cell according to claim 11, wherein the cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

17. (Original) The cell according to claim 12, wherein the cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

18. (Original) The cell according to claim 13, wherein the cell is further CD14-negative, CD45-negative, CD90-negative, Flk-1-negative, CD31-negative, CD105-negative, CD49b-negative, CD49d-negative, CD29-positive, CD54-negative, CD102-negative, CD106-negative, and CD44-positive.

19. (Original) The cell according to claim 1, which does not take up Hoechst 33342.

Claim 20 (Cancelled).

21. (Previously Presented) The cell according to claim1, which differentiates into a ventricular cardiac muscle cell.

22. (Previously Presented) The cell according to claim 1, which differentiates into a sinus node cell.

23. (Previously Presented) The cell according to claim 1, wherein the bone marrow is derived from a mammal.

24. (Original) The cell according to claim 23, wherein the mammal is selected from the group consisting of a mouse, a rat, a guinea pig, a hamster, a rabbit, a cat, a dog, a sheep, a swine, cattle, a goat and a human.

25. (Previously Presented) The cell according to claim 1, which is mouse bone marrow-derived multipotential stem cell BMSC (FERM BP-7043).

26. (Previously Presented) The cell according to claim 1, which differentiates into a cardiomyocyte by demethylation of a chromosomal DNA of the cell.

27. (Original) The cell according to claim 26, wherein the demethylation is carried out by at least one selected from the group consisting of demethylase, 5-azacytidine, and dimethyl sulfoxide, DMSO.

28. (Original) The cell according to claim 27, wherein the demethylase comprises the amino acid sequence represented by SEQ ID NO:1.

Claims 29-37 (Cancelled).

38. (Previously Presented) The cell according to claim 1, wherein the differentiation is inhibited by a fibroblast growth factor-2, FGF-2.

39. (Original) The cell according to claim 38, wherein the FGF-2 comprises the amino acid sequence represented by SEQ ID NO:7 or 8.

Claim 40 (Cancelled).

41. (Previously Presented) The cell according to claim 1, which differentiates into a cardiac muscle by transplantation into a blastocyst or by co-culturing with a cardiomyocyte.

Claim 42 (Cancelled).

43. (Currently Amended) The cell according to claim ~~42, wherein the activator is~~ 1, which differentiates into an adipocyte by a compound having a thiazolidione skeleton.

44. (Original) The cell according to claim 43, wherein the compound is at least one selected from the group consisting of troglitazone, pioglitazone, and rosiglitazone.

Claims 45-46 (Cancelled).

47. (Currently Amended) A method for differentiating a cell into a cardiac muscle, comprising selecting a cell according to ~~claims 1 or 6-28~~ claims 1, 6-19 or 21-28 and administering thereto a chromosomal DNA-dimethylating agent.

48. (Previously Presented) A method for redifferentiating the cell according to claim 9 into a cell which is CD34-negative, comprising selecting said cell and administering thereto a chromosomal DNA-dimethylating agent.

49. (Previously Presented) A method for redifferentiating a cell comprising

selecting a cell which is CD117-negative and CD140-positive, administering thereto a chromosomal DNA-dimethylating agent and obtaining a cell according to claim 8.

50. (Original) The method according to claim 48 or 49, wherein the chromosomal DNA-dimethylating agent is selected from the group consisting of a demethylase, 5-azacytidine, and DMSO.

51. (Original) The method according to claim 50, wherein the demethylase comprises the amino acid sequence represented by SEQ ID NO:1.

52. (Currently Amended) A method for differentiating a cell into a cardiac muscle comprising

selecting the cell according to any one of ~~claims 1 or 6 to 28~~ claims 1, 6-19 or 21-28 and applying thereto a factor which is expressed in a cardiogenesis region of a fetus or a factor which acts on differentiation into a cardiomyocyte in a cardiogenesis stage of a fetus.

53. (Original) The method according to claim 52, wherein the factor which is expressed in a cardiogenesis region of a fetus or the factor which acts on differentiation into a cardiomyocyte in a cardiogenesis stage of a fetus is at least one selected from the group consisting of a cytokine,

an adhesion molecule, a vitamin, a transcription factor, and an extracellular matrix.

54. (Original) The method according to claim 53, wherein the cytokine is at least one selected from the group consisting of a platelet-derived growth factor, PDGF; a fibroblast growth factor-8, FGF-8; an endothelin 1, ET1; a midkine; and a bone morphogenetic factor, BMP-4.

55. (Previously Presented) The method according to claim 54, wherein PDGF, FGF-8, ET1, midkine, and BMP-4 comprise the amino acid sequence represented by SEQ ID NOS:3 or 5, the amino acid sequence represented by SEQ ID NO:64, the amino acid sequence represented by SEQ ID NO:66, the amino acid sequence represented by SEQ ID NO:68, and the amino acid sequence represented by SEQ ID NO:70, respectively.

56. (Previously Presented) The method according to claim 53, wherein the adhesion molecule is at least one member selected from the group consisting of a gelatin, a laminin, a collagen, and a fibronectin.

57. (Original) The method according to claim 53, wherein the vitamin is retinoic acid.

58. (Previously Presented) The method according to claim 53, wherein the transcription factor is at least one member selected from the group consisting of Nkx2.5/Csx, GATA4, MEF-2A, MEF-2B, MEF-2C, MEF-2D, dHAND, eHAND, TEF-1, TEF-3, TEF-5, and MesPl.

59. (Previously Presented) The method according to claim 58, wherein Nkx2.5/Csx, GATA4, MEF-2A, MEF-2B, MEF-2C, MEF-2D, dHAND, eHAND, TEF-1, TEF-3, TEF-5, and MesPl comprise the amino acid sequence represented by SEQ ID NO:9, the amino acid sequence represented by SEQ ID NO:11, the amino acid sequence represented by SEQ ID NO:13, the amino acid sequence represented by SEQ ID NO:15, the amino acid sequence represented by SEQ ID NO:17, the amino acid sequence represented by SEQ ID NO:19, the amino acid sequence represented by SEQ ID NO:21, the amino acid sequence represented by SEQ ID NO:23, the amino acid sequence

represented by SEQ ID NO:25, the amino acid sequence represented by SEQ ID NO:27, the amino acid sequence represented by SEQ ID NO:29, the amino acid sequence represented by SEQ ID NO:62, respectively.

60. (Previously Presented) The method according to claim 53, wherein the extracellular matrix is an extracellular matrix derived from a cardiomyocyte.

61. (Currently Amended) A method for differentiating a cell into an adipocyte comprising selecting the cell according to any one of ~~claims 1 or 6 to 28~~ claims 1, 6-19 or 21-28 and applying thereto an activator of nuclear receptor PPAR-γ.

62. (Original) The method according to claim 61, wherein the activator is a compound having a thiazolidione skeleton.

63. (Original) The method according to claim 62, wherein the compound is at least one selected from the group consisting of troglitazone, pioglitazone, and rosiglitazone.

Claims 64-77 (Canceled)

78. (Currently Amended) A method for specifically transfecting a wild-type gene corresponding to a mutant gene in a congenital genetic disease to a myocardium, comprising using the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44 into which the wild-type gene corresponding to a mutant gene in a congenital genetic disease of a heart has been introduced.

79. (Currently Amended) A therapeutic agent for a heart disease, comprising, as an active ingredient, the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44 into which a wild-type gene corresponding to a mutant gene in a congenital genetic disease of a heart has been introduced.

80. (Currently Amended) A method for producing an antibody comprising selecting a cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, using the cell as an antigen and obtaining an antibody which specifically recognizes the cell.

81. (Currently Amended) A method for isolating a cell having the potential to differentiate into a cardiomyocyte according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising using an antibody obtained by the method according to claim 80.

82. (Currently Amended) A method for obtaining a surface antigen specific for the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising using the cell.

83. (Currently Amended) A method for screening a factor which proliferates the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising using the cell.

84. (Currently Amended) A method for screening a factor which induces the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44 to differentiate into a cardiomyocyte, comprising using the cell.

85. (Currently Amended) A method for screening a factor which immortalizes the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising using the cell.

86. (Currently Amended) A method for immortalizing the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, comprising expressing a telomerase in the cell.

87. (Original) The method according to claim 86, wherein the telomerase comprises the amino acid sequence represented by SEQ ID NO:31.

88. (Currently Amended) A therapeutic agent for a heart disease, comprising, as an active ingredient, the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44 which has been immortalized by expressing a telomerase.

89. (Original) The therapeutic agent according to claim 88, wherein the telomerase comprises the amino acid sequence represented by SEQ ID NO:31.

90. (Currently Amended) A culture supernatant comprising the cell according to any one of ~~claims 1 or 6 to 46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44.

91. (Currently Amended) A method for inducing a cell to differentiate into a cardiomyocyte, comprising selecting a cell according to any one of ~~claims 1 or 6-46~~ claims 1, 6-19 or 21-28, 30, 39, 41, 43 or 44, and applying thereto a culture supernatant comprising any of said cells.